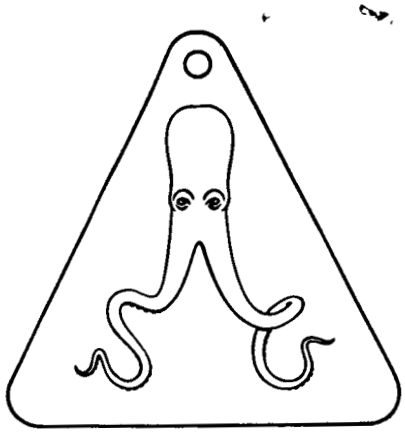

(NASA-CR-126699) TEKTITE 2 BEHAVIORAL OBSERVER HANDBOOK (Bellcomm, Inc.) 45 p

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BEHAVIORAL OBSERVER HANDBOOK

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INTRODUCTION

This instruction manual is designed to acquaint the TEKTITE II behavioral observer with the data collection procedures of the Crew Observation program. The majority of all of the behavioral data collection will be done within a topside command van. The van is divided into two sections: one section being the command section, the other, the behavior monitoring station. The command station will be manned at all times by a test director. His mission is to continually maintain the safety of the men in the habitat and in the sea. The behavioral observers will work in the behavior monitoring station. This station will be connected with the underwater habitat in a number of ways. Closed circuit television cameras will send back pictures of each of the four main compartments in the habitat and possibly the area immediately outside. Open microphones in each compartment pick up the conversations of the aquanauts which are relayed to the behavior station. Observers should also be able to hear aquanauts conversing with topside personnel using any of a variety of communication links.

The habitat could be described as two large cans connected by a tunnel between the upper decks. Each of the four major compartments has rather unique and specific functions. The crew quarters, [CQ] offers a sleeping, food preparation and eating area with food storage and recreation facilities. The bridge compartment above serves as a watch standing facility with major communication lines to the surface, closed circuit TV monitors focused on other areas inside the habitat, and considerable work area. The engine room across the tunnel from the bridge holds the large machinery committed to maintaining a comfortable and safe habitat environment. It also contains a storage freezer and the head. There is a small secondary compartment located directly above the engine room. This is the observation cupola. The final compartment is the wet lab. This area allows egress to and ingress from the sea through the hatchway, serves as the major work space, and contains major research marine equipment and the shower.

Each behavioral measure will be recorded by punching the necessary information directly onto a punch card. A portable unit, called an Information Recorder, allows an information template to overlay a preperforated punch card. Each measure has its own unique information template.

A different measure ID (MSR ID) has been assigned to each template. The MSR ID along with the Habitat ID [Maxi or Mini], Mission ID, and day of mission is to be punched on each new punch card before the recording of "content" data of any observation begins. The last aspect of the card identification, the real time of the observation, should be punched according to the readout of the 24 hour digital clocks provided.

Behavioral information can be recorded after the fact [off-line] or as it occurs [on-line collection]. Mood adjective checklists for instance are filled out by the aquanauts while in the habitat. Such information can only be punched onto cards once it reaches the observer's hands. The specific event record is recorded by the observer directly with the aid of a paper and pencil form. At the day's end this data is transferred to punch cards. The greater majority of the behavioral data, however, will be punched, on occurrence, directly onto punch cards.

Our final pool of measures taps only carefully selected aspects of the behaviors which occur within the habitat. We make no claim to cover all behaviors. However to enlarge our project's coverage of the overall proceedings, the Unusual Events Log (UEL) will be available for the observers and investigators to record -- when able -- unusual occurrences.

AQUANAUT STATUS RECORD

Of particular interest within the behavioral program are a limited number of parameters specifically concerned with the individual aquanauts rather than with specific events the crew members might engage in like diving, meals, talking with topside, etc. Because of this distinction the observer is not forced into waiting for such specific events to occur. Instead, at 12 specific times within each 60 minute period the observer will answer 6 specific questions regarding each aquanaut.

Location: in which compartment of the habitat is each man, and within which section of that compartment is he located? A floor area is available on the template. From this schematic the exact location of the separate aquanauts can be identified, then punched. Should men be on a dive, No. 8 in the compartment category should be punched for each diver. No section punch is then necessary. Occasionally a man may escape the vigilance of the behavioral observer and although within the habitat, his whereabouts remains unknown--Don't Know should be punched.

The observer responsible for taking the status record can reduce the number of Don't Know punches by keeping close watch on the overall context and ongoing activity within the habitat across his entire watch period.

Activity categories have been carefully designed to insure complete coverage of all possible activities. Don't Know need only be punched when a man's whereabouts is simply unknown. The following paragraphs are devoted to descriptions of each activity status category.

Direct Marine Science. Doing observation and/or data collection in the water or habitat. Assume that a man in the water is engaged in D.M.S. unless you have strong cause to believe differently. Writing up research reports, note taking, etc., also punch DMS. In short, anything directly dealing with the crew member's scientific activity in which he is an active agent, punch DMS.

Marine Science Support. A crew member preparing his diving gear, suiting up for a dive, reading scientific manuals, assisting another aquanaut with his research can all be defined as marine science support.

Locomoting. Moving about the habitat. To include walking, crawling, climbing.

Habitat Maintenance and Repair. Changing the baralyme, scrubbing the floors, cleaning the habitat, inside or out; reading meters and gauges, and anything else which directly contributes to the continuation of the overall habitability and good repair of the habitat.

Self-Maintenance. Includes eating, showering, shaving, cleaning clothing, cooking for self, etc. Anything that is keyed toward caring for one's own person as opposed to caring for others.

Maintenance of Others. Caring predominantly for other crew members. Includes cooking, serving, cleaning up. Assisting others in dive preparation and secure and any other action which contributes to the health or well being of another.

Co-recreation. Sitting around talking about non-operational topics, playing cards, engaging actively with others in leisure time activities.

Solitary Recreation. Reading probably for entertainment or enjoyment, listening to tapes, radio, television, etc. If the man is not actively engaged in social interaction, even though in the company of others, he is engaged in solitary recreation.

Relaxing, Resting, Idling. The crew member seems to be engaged in no meaningful activity, but appears to be simply sitting or lying around resting. He must be obviously awake.

Napping and Sleeping. Man is asleep either during the daylight hours or for the night.

Don't Know. Should only be punched when the man is temporarily "lost" or his activity is truly unfathomable.

It is entirely possible that a crew member may be simultaneously engaged in a variety of activities comprising more than one category.

In such a case, the observer should judge which activity is the primary one being accomplished and punch the card accordingly.

The communication categories are straightforward. The observer simply asks the following questions in punching this aspect of aquanaut behavior: "Is a man communicating with topside (either talking or listening)?" If so, punch accordingly. "Is he talking with another Aquanaut within the Habitat?" "If not, is he listening to another Aquanaut?" If so, punch in the listener's ID column to whom he was listening. And, finally, should the Aquanaut be doing none of the above, then punch "Not communicating."

The posture categories are illustrated on the template by a stick figure next to each category. Standing slouching differs from Standing erect, in that although the man is generally upright his weight is often on one leg, shoulders relaxed and often tipped, or stomach forward; the body seems to be slack. Standing leaning will usually occur, as illustrated, with the aid of some support. Leaning differs from Standing slouching in that trunk and legs are no longer both upright. One or the other will assume a trend away from the vertical. Sitting upright is the usual position during the eating of a meal. "Sitting forward" is defined as sitting with the trunk canted forward such as during an intense conversation or desk work. Sitting slouching means hips forward, lower back curved, often leaning back in a chair. Reclining can occur in a chair if it is tipped back appreciably and legs are propped up. Reclining also covers lying down, if the head and upper trunk are propped considerably, such as lying on one's side while reading. Squatting, kneeling, all fours, and lying down, are self explanatory.

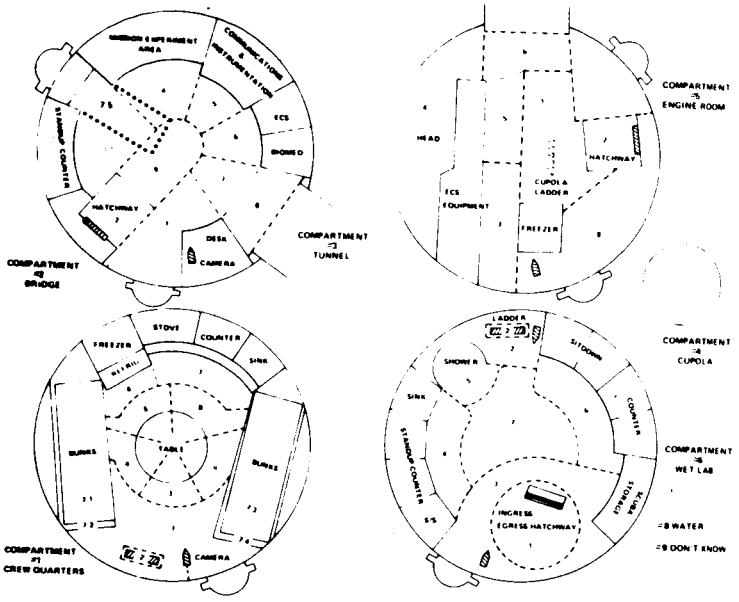
The movements of the aquanauts are broken down across two continua, type and vigor. Translational movement has to do with movement of the body through space, specifically the trunk. This category would include transiting of any kind as well as bending. Manipulative movements encompass all actions in which the hands and/or arms are interfacing with equipment, instrumentation, or tools of any kind. Expressive movement is motion specifically of the hands or feet which communicates something

about the condition or state of the aquanaut, including such things as drumming the fingers, jiggling the leg or gesturing with the hand and/or arm.

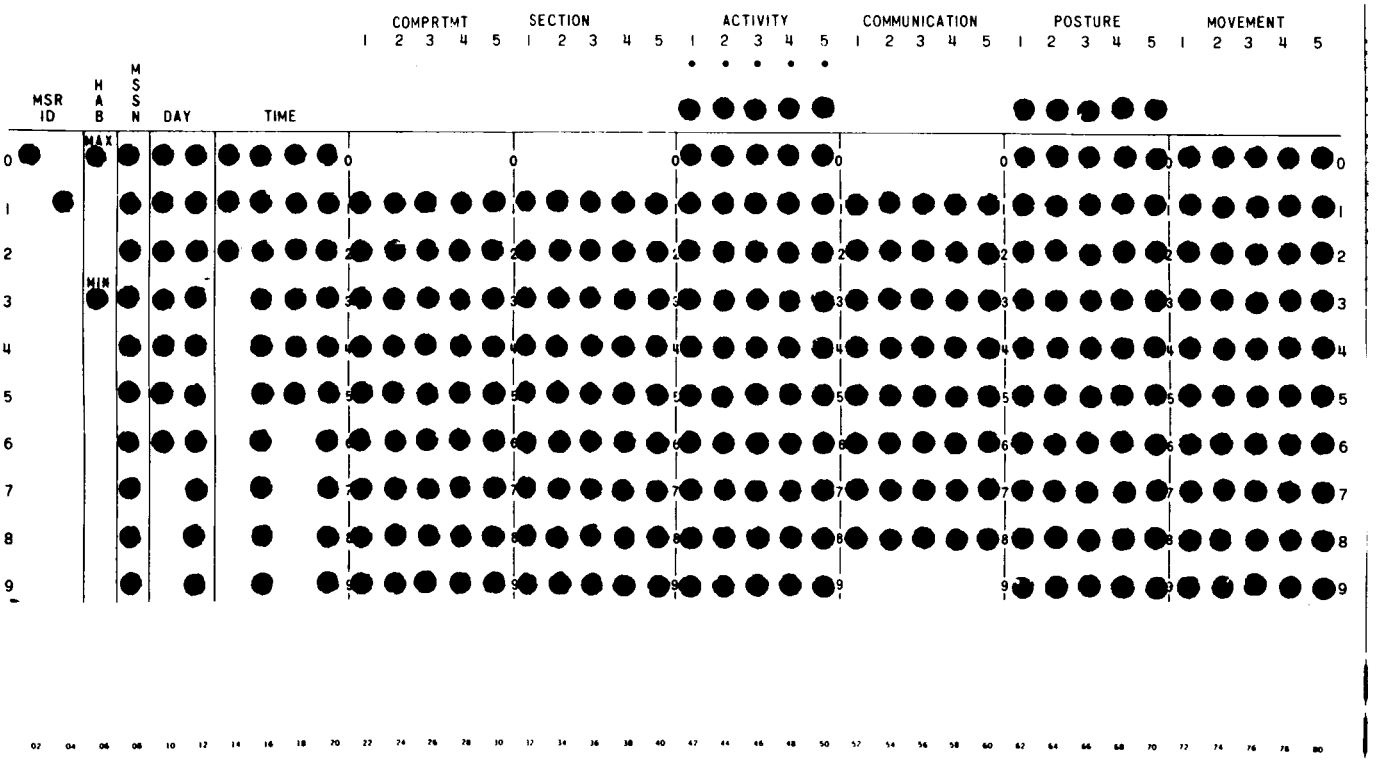
Each one of the three categories is, in turn, broken down into three separate intensity levels--light, moderate, and vigorous. What constitutes different movement intensities? This question is answered in detail in Appendix A.

The recording observer must be aware of the context of the ongoing situation within the habitat throughout his watch period as well as specifically priming himself on each aspect of the status record just prior to punching. For all categories except communication the observer should attempt to take a still picture in his mind's eye of the overall behavior at the moment of sampling.

AQUANAUT STATUS RECORD



ACTIVITY CATEGORIES	COMMUNICATION CATEGORIES	POSTURE CATEGORIES	MOVEMENT CATEGORIES
11 DIRECT MARINE SCIENCE		11 STANDING-ERECT	
0 MAR SCIENCE SUPPORT		0 STANDING-SLOUCHING	0 NO MOVEMENT
1 LOCOMOTING	1 NOT COMMUNICATING NEITHER TALKING NOR LISTENING	1 STANDING-LEANING	1 LIGHT TRANSLATIONAL
2 HABITAT MAINTNC AND REPAIR	2 TALKING WITH ANOTHER AQUANAUT	2 SITTING-FORWARD	2 MODERATE TRANSLATIONAL
3 SELF MAINTENANCE	3 LISTENING TO AQUANAUT #1	3 SITTING-UPRIGHT	3 VIGOROUS TRANSLATIONAL
4 MAINTENANCE OF OTHERS	4 LISTENING TO #2	4 SITTING-SLOUCHING	4 LIGHT MANIPULATIVE
5 CO RECREATION	5 LISTENING TO #3	5 RECLINING	5 MODERATE MANIPULATIVE
6 SOLITARY RECREATION	6 LISTENING TO #4	6 SQUATTING	6 VIGOROUS MANIPULATIVE
7 RELAXING, RESTING IDLING	7 LISTENING TO #5	7 KNEELING	7 LIGHT EXPRESSIVE
8 MAPPING SLEEPING	8 TALKING OR LISTENING TO TOPSIDE	8 ALL FOURS	8 MODERATE EXPRESSIVE
9 DON'T KNOW		9 LYING DOWN	9 VIGOROUS EXPRESSIVE



DIVE RECORD

This measure will be recorded on-line using the dive record template and information recorder. It focuses on the dive of any given aquanaut. The MSR ID for dive record is 02.

Dive start time is recorded following MSR ID, habitat ID, mission ID, and mission day. Dive start time is the time (re. 24 hour clock) to the nearest minute that the first aquanaut enters the water.

There are four specific data categories to be collected for each diver within the dive record. They are: type of rig used in diving, egress order, dive duration, and ingress order. The rig categories are: (1) open circuit, (2) closed circuit, and (3) hookah. The proper number corresponding to the type of rig used is to be punched under the "Rig" category for each diver.

At the start of a team dive there will be a specific order in which each aquanaut leaves the habitat. This is termed "Egress Order." It should be recorded in the category marked "EGR" whether the aquanaut is first, second, third, fourth, or fifth, i.e., 1, 2, 3, 4, or 5, out of the habitat.

Dive duration is the total number of minutes in the water between end of preparation for and beginning of securing from a dive. The observer should note the actual start and stop time for the dives of each aquanaut on paper, calculate the duration, then punch.

At the end of a dive, the order in which each aquanaut returns to the habitat should be recorded. This is termed the "Ingress Order," and is recorded under the category marked "INGR" in the same manner as the egress order was recorded.

After all the data have been collected for a given dive, file the used IBM card, and load the information recorder with a fresh card.

[redacted]

LEGEND

HABITAT

MAX. – 80 FT. HABITAT
MIN. – 100 FT. HABITAT

MISSION ID

IN NUMERICAL SEQUENCE [FROM 01] FOR EACH HABITAT

MISSION DAY

FIRST DAY = 01, ETC.

DIVE START TIME

TIME RE: [24 HR CLOCK] TO NEAREST MINUTE FIRST AQUANAUT ENTERS WATER

RIG CATEGORIES

1. OPEN CIRCUIT
2. CLOSED CIRCUIT
3. HOOKAH
4. FREE

EGR [ESS] ORDER

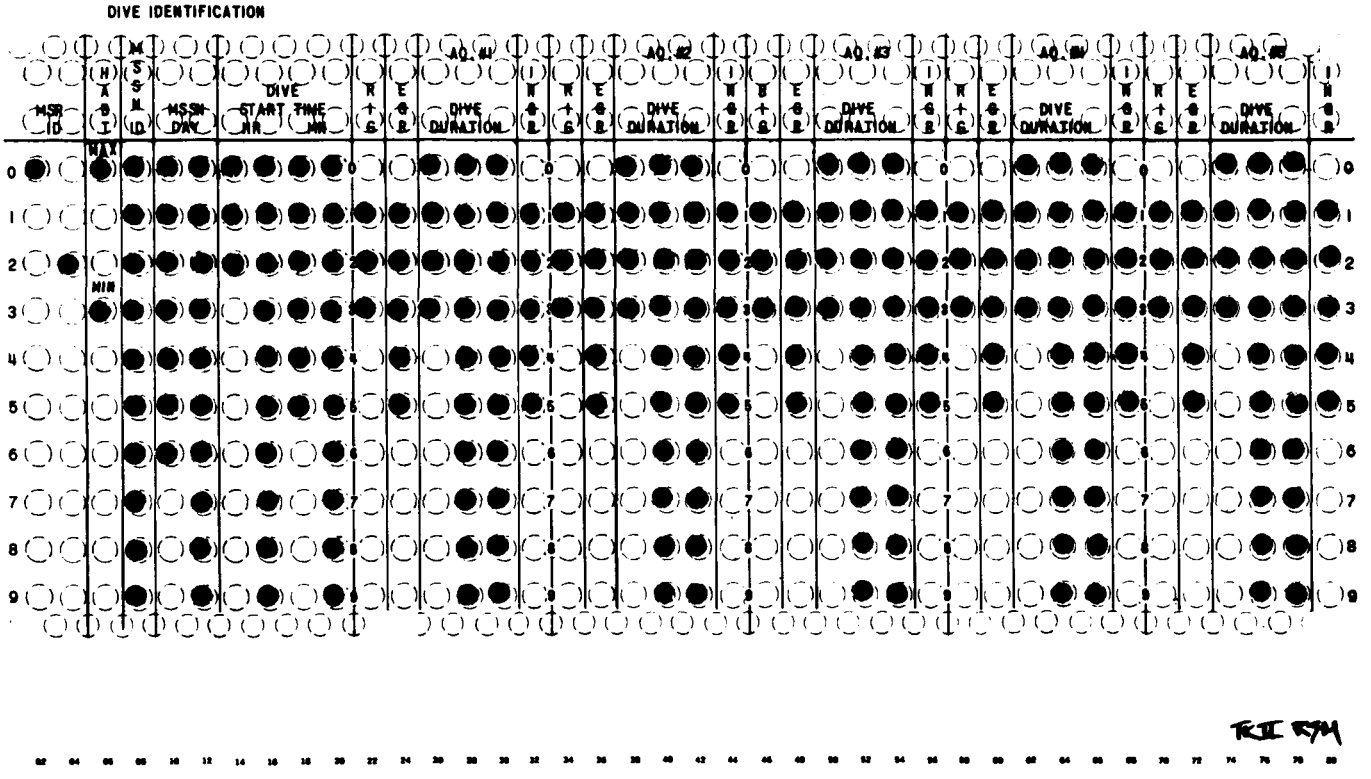
AT START OF TEAM DIVE IS AQUANAUT FIRST, 2ND, 3RD, ETC. OUT OF HABITAT

DIVE DURATION

TOTAL NO. OF MINUTES IN WATER BETWEEN END OF PREPARATION FOR AND BEGINNING OF SECURING FROM DIVE

INGR [ESS] ORDER

AT END OF DIVE ORDER OF AQUANAUT'S RETURN IE. IS HE FIRST, 2ND ETC BACK INTO HABITAT.



GAS USAGE

This measure is collected through the use of the gas log and the gas usage template. The gas log, located within the habitat, is a paper log which is filled out before and after each dive by the aquanauts themselves. An illustration of the gas log is on the following page.

Periodically (about every 3-4 days) the gas log will be sent topside, where the observers will record the data, via the gas usage template. All the necessary data will be given in the gas log, thereby making the transfer from gas log to template quite simple.

The MSR ID for gas usage is 03. Habitat ID, mission ID, and mission day are recorded as usual. The mission day can be interpreted from the date given in the paper log. Start time, aquanaut ID, and type of rig used may also be obtained directly from the paper log. The rig categories again are: "1" for open circuit, "2" for closed circuit, and "3" for hookah.

Dive duration is the difference in minutes between dive start and stop times as listed in the paper log.

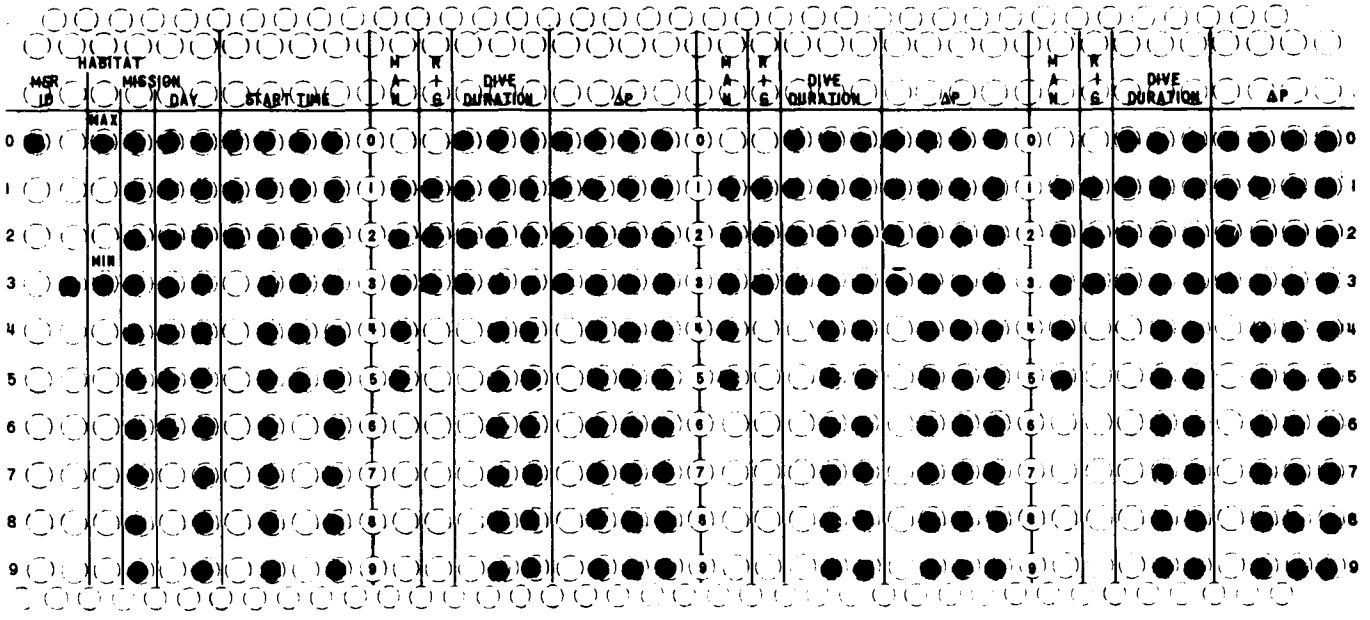
Δp is the difference, in pounds per square inch gauged between pre- and post-dive gauge readings.

After recording all the data pertaining to a specific "Start Time," file the used IBM card and load the information recorder with a fresh card.

GAS LOG

DATE	GEAR	NAME	DIVE START TIME	PRE-DIVE BOTTLE PRESSURE [PSIG]	DIVE STOP TIME	POST-DIVE BOTTLE PRESSURE [PSIG]

GAS USAGE



START TIME

GENERAL START TIME LISTED IN PAPER LOG

MAN

PUNCH HIS ID #

RIG CATEGORIES

1. OPEN CIRCUIT
2. CLOSED CIRCUIT
3. HOOKAH

DIVE DURATION

DIFFERENCE IN MINUTES, BETWEEN DIVE START AND STOP TIMES AS LISTED IN THE PAPER LOG

ΔP

DIFFERENCE, IN POUNDS PER SQUARE INCH GAUGED BETWEEN PRE AND POST DIVE GAUGE READINGS

MEAL BEHAVIOR

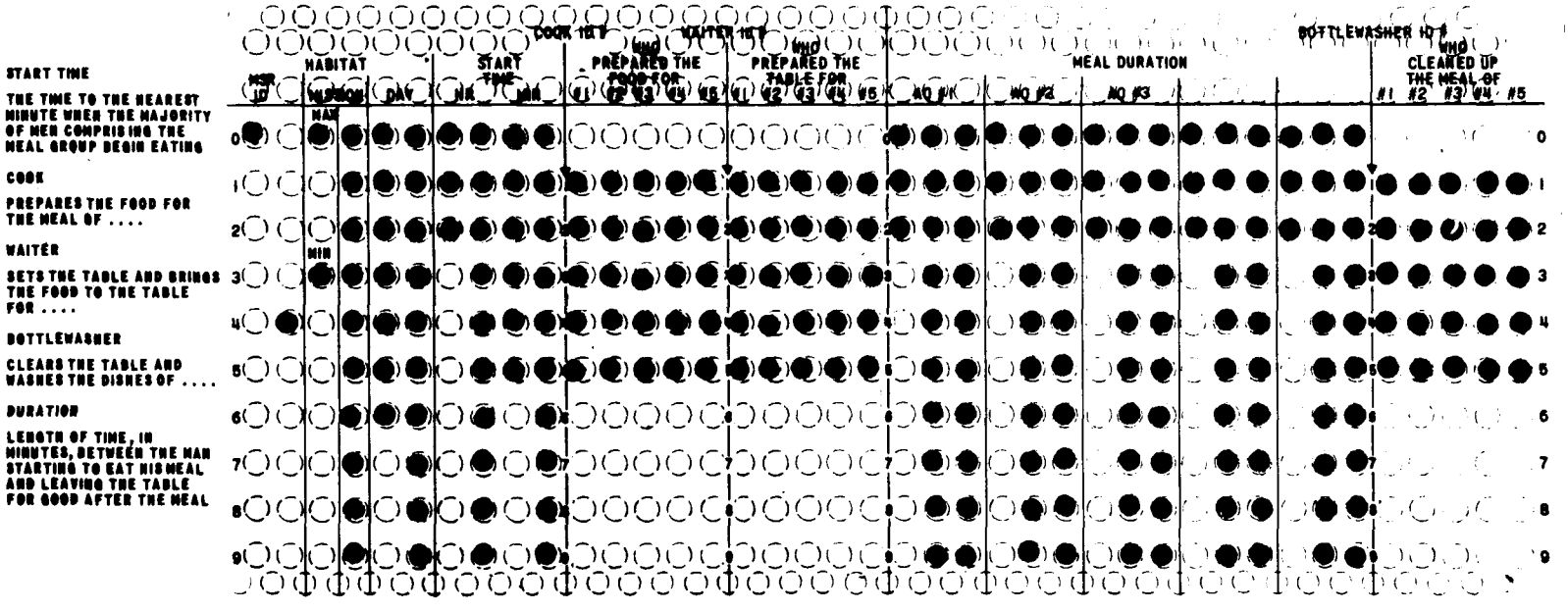
This measure is collected on-line through the use of the meal behavior template. The MSR ID for meal behavior is 04. After the MSR ID, habitat ID, mission ID, and mission day have been recorded, the "Start Time" of the meal is recorded in the appropriate column. Start time is defined as the time to the nearest minute when the majority of the men comprising the meal group begin eating.

Each aquanaut's meal must be cooked, served, and cleaned up. Therefore, the identification of the cook, the waiter, and the bottle-washer for each individual man's meal is recorded in the appropriate section on the template; e.g., if at a given meal Diver 1 prepared the food for all the divers, a "1" should be recorded for each diver in the section marked "Cook ID." If, however, at the same meal, Divers 2 and 3 set the table and served the food, but Diver 2 did the majority of the work, a "2" should be recorded for each diver in the section designated "Waiter ID." At the end of the meal, if Diver 1 cleared only his dishes from the table, and washed only his dishes, and Diver 5 cleared the rest of the dishes from the table and washed the rest of the dishes, a "1" should be recorded for Diver 1 and a "5" should be recorded for all other divers in the section marked "Bottlewasher ID."

Meal duration is the length of time in minutes between the man's starting to eat his meal and leaving the table for good after the meal. Each calculation is recorded under the appropriate aquanaut's ID in the section marked "Meal Duration."

After all the appropriate data have been recorded, the observer should file the used IBM card and load the data recorder with a fresh one for the next meal observation.

MEAL


START TIME
THE TIME TO THE NEAREST MINUTE WHEN THE MAJORITY OF MEN COMPRISING THE MEAL GROUP BEGIN EATING
COOK
PREPARES THE FOOD FOR THE MEAL OF ....
WAITER
SETS THE TABLE AND BRINGS THE FOOD TO THE TABLE FOR ....
BOTTLEWASHER
CLEARS THE TABLE AND WASHES THE DISHES OF ....
DURATION
LENGTH OF TIME, IN MINUTES, BETWEEN THE MAN STARTING TO EAT HIS MEAL AND LEAVING THE TABLE FOR GOOD AFTER THE MEAL
MSR ID
HABITAT
MAN
MIN
START TIME
DAY
HR
MIN
COOK IS
WHO PREPARED THE FOOD FOR
#1 #2 #3 #4 #5
WAITER IS
WHO PREPARED THE TABLE FOR
#1 #2 #3 #4 #5
MEAL DURATION
AQ #1
AQ #2
AQ #3
BOTTLEWASHER IS
WHO CLEANED UP THE MEAL OF
#1 #2 #3 #4 #5
0
1
2
3
4
5
6
7
8
9

THE END

ARISING-RETIRING BEHAVIOR

This measure is collected on-line through the use of the arising-retiring template. The MSR ID of arising-retiring behavior is 05. The MSR ID, habitat ID, mission ID, mission day, and record ID must be recorded before data collecting begins.

This template allows punching of time of arising or time of retiring. Punch number "4" in the record ID column when punching arising, and punch number "7" when punching retiring.

Although some or even all of the crew members may retire after midnight, the mission day would always be punched as the day on which individuals would normally retire, i.e., as on the day before midnight...the previous day.

Arising is defined as being that time when an aquanaut gets out of bed to begin the day.

Retiring is defined as being that time when an aquanaut gets into his bunk for the night.

Use the 24 hour clock time to the nearest minute when recording time. After all arising or retiring times for a given mission day have been recorded, file the used IBM card and load the information recorder with a fresh card.

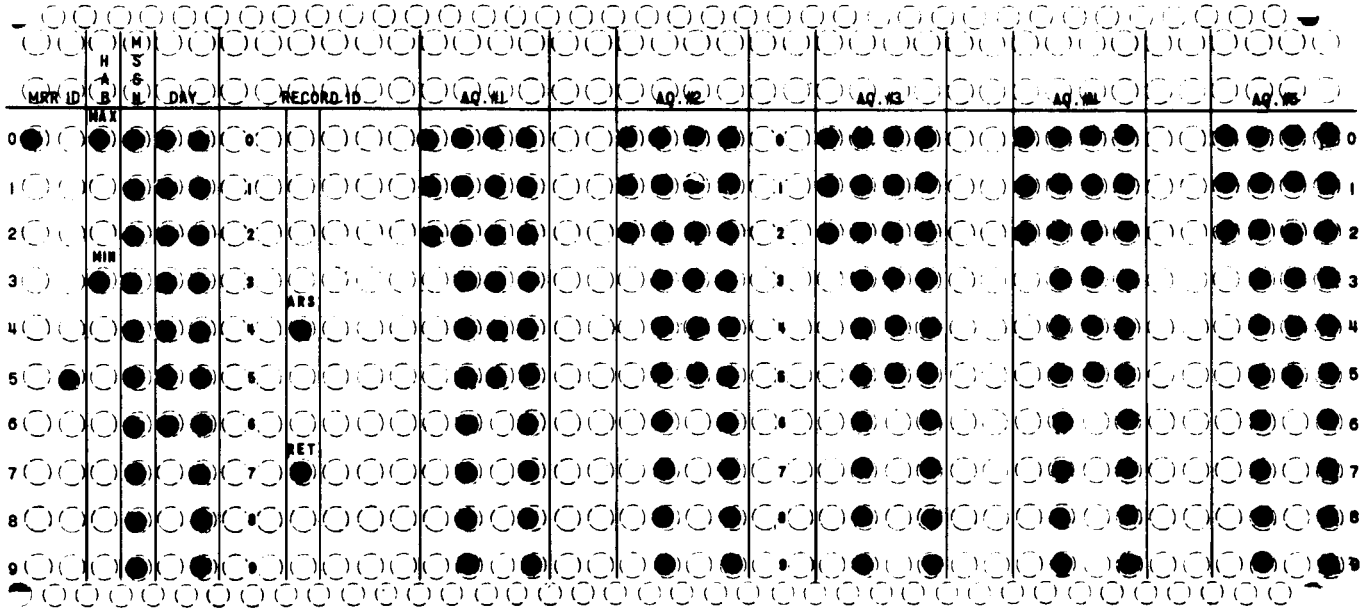
ARISING—RETIRING

INSTRUCTIONS:

THIS TEMPLATE ALLOWS PUNCHING OF TIME OF ARISING OR TIME OF RETIRING PUNCH #6 IN RECORD ID COLUMN WHEN PUNCHING ARISING AND #7 WHEN PUNCHING RETIRING. USE 24 HR CLOCK TIME TO THE NEAREST MINUTE.

CONVENTION-

ALTHOUGH SOME OR EVEN ALL OF THE CREW MEMBERS MAY RETIRE AFTER MIDNIGHT THE MISSION DAY ID SHOULD ALWAYS BE PUNCHED AS THE DAY ON WHICH INDIVIDUALS WOULD NORMALLY RETIRE I.E. AS ON THE DAY BEFORE MIDNIGHT...THE PREVIOUS DAY.



DEFINITIONS: ARISING _ WHEN AN AQUANAUT GETS OUT OF BED TO BEGIN THE DAY
RETIRING – WHEN THE AQUANAUT GETS INTO HIS BUNK FOR THE NIGHT

TK II RM

SLEEP DURATION

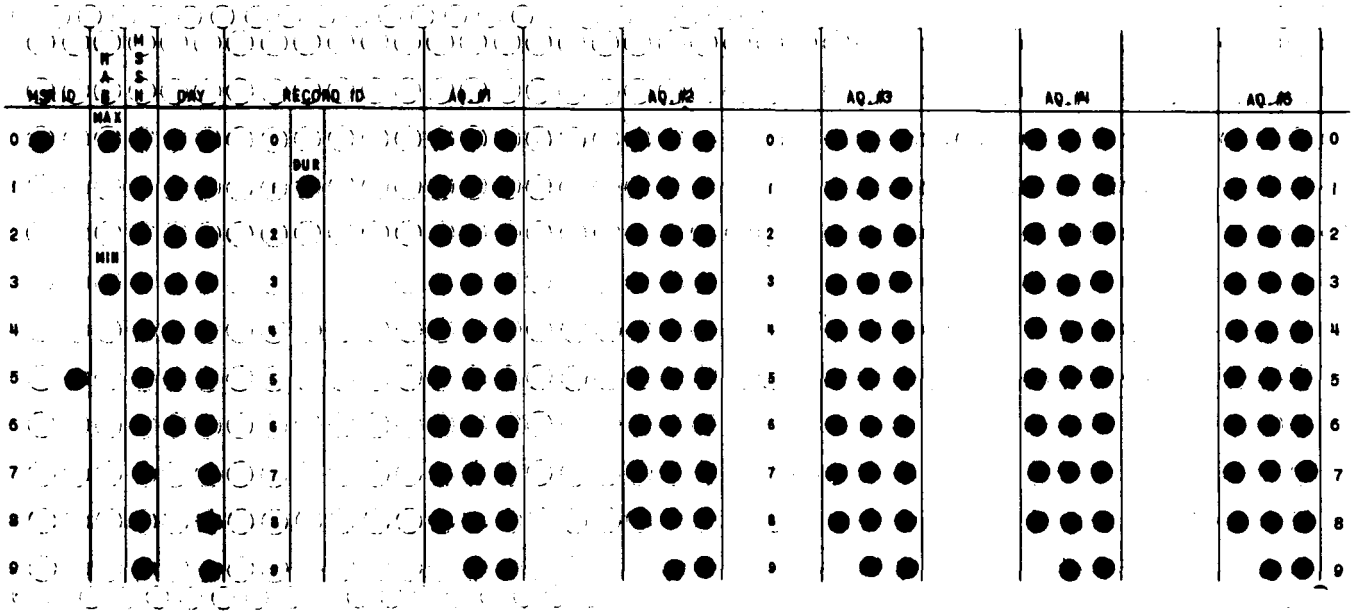
The sleep duration measure is collected on-line through the use of the sleep duration template. The MSR ID for this measure is 05 and should be recorded along with habitat ID, mission ID, mission day, and record ID before data collection begins.

Mission day is always the day on which the sleep period in question ended. The record ID is always "1," which designates this record as sleep duration.

The duration is the total number of minutes following the time of retiring the night before until the time of arising on the morning of the record. Sleep duration is recorded in the columns under the appropriate diver's ID number shown on the template.

After all calculations have been recorded, file the used IBM card and load the information recorder with a fresh card.

OVERNIGHT SLEEP DURATION



INSTRUCTIONS:

WHEN PUNCHING THE MISSION DAY ALWAYS PUNCH THE DAY ON WHICH THE SLEEP PERIOD IN QUESTION ENDED

THE DURATION IS THE TOTAL NUMBER OF MINUTES FOLLOWING THE TIME OF RETIRING THE NIGHT BEFORE UNTIL THE TIME OF ARISING ON THE MORNING OF THE RECORD

COMMUNICATION WITH TOPSIDE - INSTRUCTIONS

Communicating with the outside world is a vital aspect of long duration missions. The behavioral program has developed an evaluative measure to examine the most trenchant components of such interchanges. The communication device used, the user's identity, who initiated the interchange, its approximate duration, and the purpose of the communication are the separate categories available for interpretation and punching by the observer.

After all identifying data is punched up to start time the observer awaits a communication between habitat and topside. Some exchanges will last less than 20 seconds, in which case a single tally mark on a prepared list under the aquanaut communicator's identification should be made and the total number of such short communications for each day by each aquanaut should be entered in the Unusual Events Log. For longer communications the template will be brought into play on-line. A complete communication, one that is punched on a single card, could be described as the important events occurring from the initiation of a conversation by picking up one of the available communication devices until the continuous use of that device ceases. The observer will note that the arrangement of the template allows punching of information for all five crew members when habitat multiple communicator situations occur. For each aquanaut talking with topside during a single and complete communication the following questions should be answered:

Start Time: 24 hour time to nearest minute that overall communication is initiated.

Initiator: Did the habitat communicator or did topside initiate that segment of the conversation?

Device: Which device available was the primary communications link used? The intercom system is located in small boxes throughout the habitat. The Bogen or sound powered phone appears as a regular telephone receiver in both CQ and B. The video

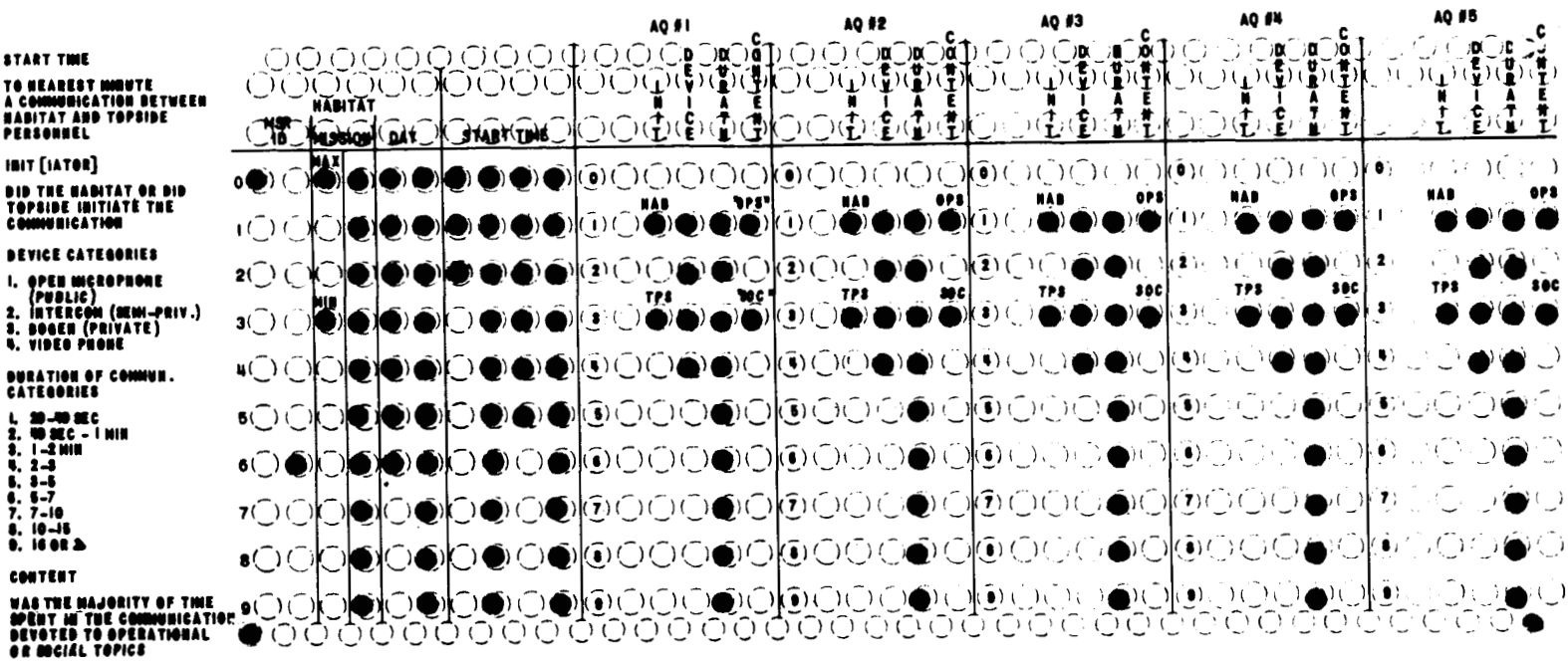
Communication with Topside - Instructions continued:

phone is a "talk-see" system set up in various places within the habitat and topside with the Watch Director.

Duration: Use the subcategory most nearly describing the time spent by that particular communicator and finally punch whether the content of that specific segment was primarily concerned with operational or social topics.

At the communication's end file the punched card and insert a fresh card in the recorder.

COMMUNICATIONS WITH TOPSIDE



SPECIFIC EVENT RECORD INSTRUCTIONS

A limited number of activities the aquanaut may engage in are of interest to the Behavioral Program. They fall roughly into three categories: Maintenance of the habitat, maintenance of one's self or others, and usage of certain facilities. The observer will record each instance of any aquanaut's involvement in any one of the categories. The original recording will be done on the paper log book supplied. A separate log sheet is used for each 24 hour period. The crucial and only aspect to record is the duration of the activity. An aquanaut, for instance, the engineer [No. 5], may maintain the habitat ten different times during the day. Each duration must be listed separately within the same box, in this case the box headed by Aquanaut #5 above and habitat maintenance as the category along the left hand side of the page. Print small.

Although the majority of the titles are quite straightforward, each category will now be discussed to identify its components. Housekeeping entails caring for personal possessions such as making one's bed and keeping the habitat in good order, in picking up, straightening, and vacuuming. At least a 5 minute segment should be spent in such activities before any recording should be done. Habitat maintenance differs from housekeeping in keeping up instrumentation and equipment necessary to the continuance of the habitat environment. This would include gauge reading, changing settings, talking to topside about such maintenance. It does not include repair which is specifically refurbishing a broken down piece of habitat equipment. It also does not include changing of the Baralime, the CO_2 scrubbing material. Head usage is simply the amount of time the aquanaut is inside the head. Showering in the wet lab is obvious as is laundry done there. Transporting food from the freezer in the engine room to the crew quarters refrigerator is food handling as is actual time spent cooking.

Specific Event Record Instructions, continued:

Under the major category of facilities usage, TV Outside, indicate the frequency and separate durations of watching television programs beamed down by the outside, topside antenna. Entertainment video tapes and tapes describing certain maintenance repertories may also be used. Any video tape played in the habitat will also be seen on one of the extra monitoring screens in the observer station. Listening to the radio is self-explanatory and would be restricted to the crew quarters. NASA will install a "package" of leisure equipments somewhere within the habitat. Usage by any aquanaut of any segment of this package should be recorded. Usage of personal leisure equipment, i.e., that brought on board by the man himself, if identifiable, should also be monitored. Finally, handling of a pressure pot and the winch should be noted.

Again, if the observer can time a sequence, fine and good. Approximations of durations are acceptable.

TEMPLATE PUNCHING

At the beginning of the day following collection, the data should be transferred to punch cards. The observer determines from the paper log in which categories activity has occurred. Each "acted-upon" category is punched on a separate card although the same template is used. The appropriate general category is punched and then the specific numbered category within the general category. The number of times each aquanaut engages in the category is punched in his columns under frequency. If he did not engage, do not punch. The general duration category column is used if timing has been approximate. Naturally the duration encompasses the total time spent over the entire 24 hour period. Should specific, fairly accurate timing on particular categories be accomplished, punch this total time in the SPC (Specific time) columns under each man.

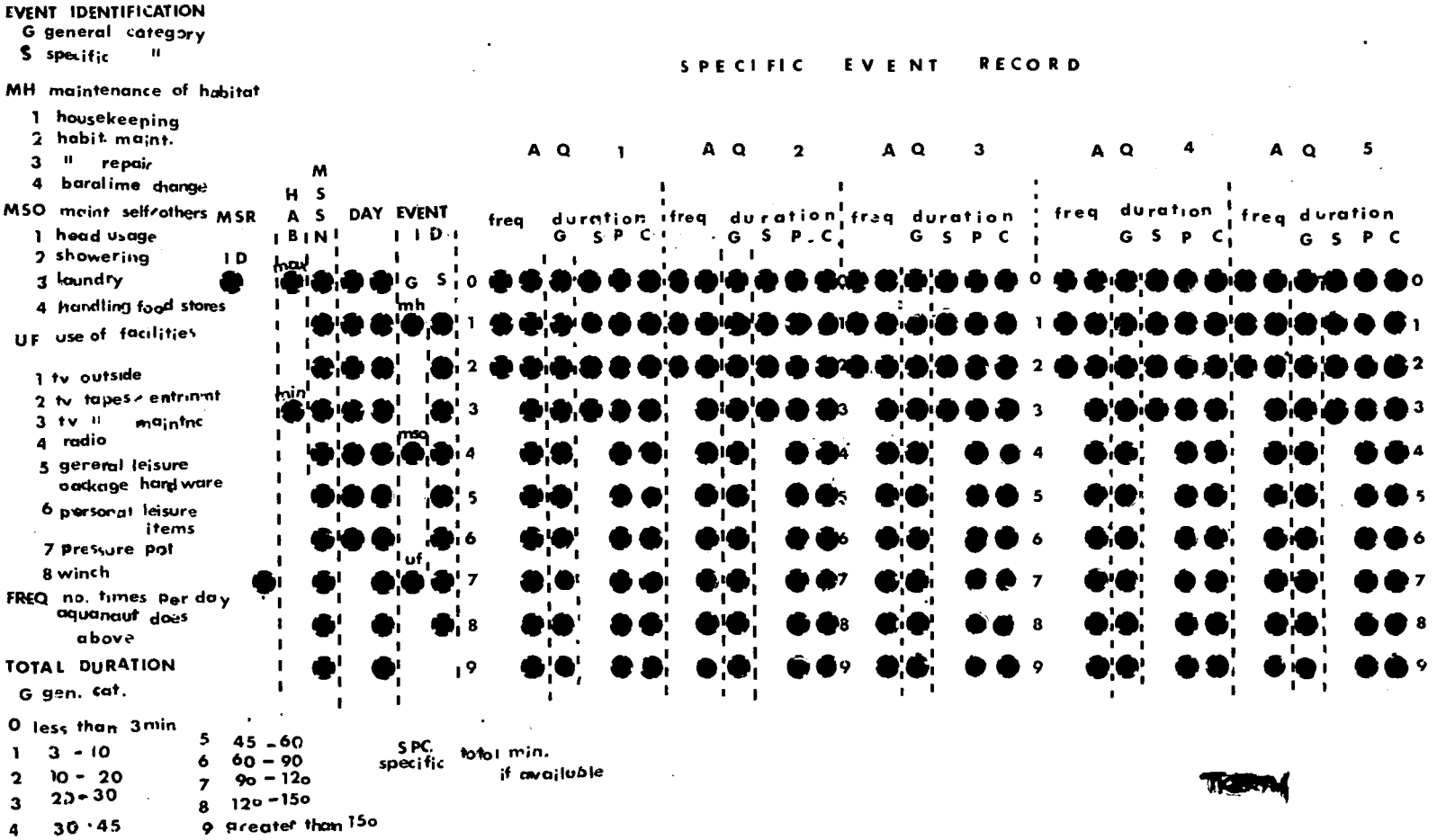
SPECIFIC EVENT RECORD

MISSION _____

DAY _____

ACTIVITY	AQUANAUT #1	AQUANAUT #2	AQUANAUT #3	AQUANAUT #4	AQUANAUT #5
HOUSE KEEPING 5 MIN.					
HABITAT MAINTE-NANCE [10 MIN]					
HABITAT REPAIR [10 MIN]					
BARALIME CHANGE					
HEAD USAGE					
SHOWERING					
LAUNDRY					
HANDLING FOOD STORES					
TV OUTSIDE					
TV TAPES ENTERTNMT					
TV TAPES MAINTNCE					
RADIO					
GEN. LEISURE PACKAGE					
PERSONAL LEISURE ITEMS					
PRESSURE POT					
WINCH					

INSTRUCTIONS. EACH TIME AN AQUANAUT ENGAGES IN ONE OF ABOVE ACTIVITIES ENTER THE DURATION OF HIS USAGE OR ACTIVITY IN THE APPROPRIATE BOX. PRINT SMALL AS A LARGE NUMBER OF ENTRIES WITHIN ANY GIVEN BOX IS POSSIBLE. FILL IN MISSION ID AND DAY OF MISSION.


SPECIFIC EVENT RECORD
EVENT IDENTIFICATION
G general category
S specific "
MH maintenance of habitat
1 housekeeping
2 habit. maint.
3 " repair
4 baralime change
MSO maint self/others
1 head usage
2 showering
3 laundry
4 handling food stores
UF use of facilities
1 tv outside
2 tv tapes/ entrtnmt
3 tv " maintnc
4 radio
5 general leisure package hardware
6 personal leisure items
7 pressure pot
8 winch
FREQ no. times per day aquanaut does above
TOTAL DURATION
G gen. cat.
0 less than 3min
1 3 - 10
2 10 - 20
3 20 - 30
4 30 - 45
5 45 - 60
6 60 - 90
7 90 - 120
8 120 - 150
9 greater than 150
SPC. specific
total min. if available
MSR
ID
DAY
EVENT
AQ 1
AQ 2
AQ 3
AQ 4
AQ 5
freq
duration
G S P C

UNUSUAL EVENTS LOG (UEL)*

Unusual events are not recorded on a template, but are recorded in a hardbound log book located near the observers. Tag every input with its own special time signature, i.e., the date and real 24 hour time. Also identify the author of the entry by recording your initials after the time signature.

Start each new entry on a separate line, skip one space between entries, and print all information to insure legibility. In describing something of importance be as accurate and definitive as possible. This record will undoubtedly accrue a number of sensitive data. With this in mind such a log must not remain unattended unless adequately secured!

Example:

April 25--1428--J.H.L.--Entry.....

.....

April 25--1540--R.L.H.--Entry.....

.....

---

*Stress should be placed on the convention of not disregarding the recording of other on-line data to make log entries. This log is surely of secondary concern.

MOOD ADJECTIVE CHECKLIST

The Mood Adjective Checklist (MACL) is a list of adjectives which describe feelings people have. There will be two MACL's to be filled out daily by the Aquanauts. One MACL contains 25 adjectives; the other contains 30 adjectives. The Aquanauts respond by marking the Quality and Strength of their response on a scale of 1 to 10.

Periodically, the MACLs will be sent topside where the responses are transferred in appropriate order to IBM cards by the observers.

Before recording the responses, be sure to record the MSR ID, Habitat ID, Mission ID, and Mission day. The MSR ID for the 25 adjective MACL is 80. The MSR ID for the 30 adjective MACL is 88. Mission Day is the day of the mission in which the MACL was filled out.

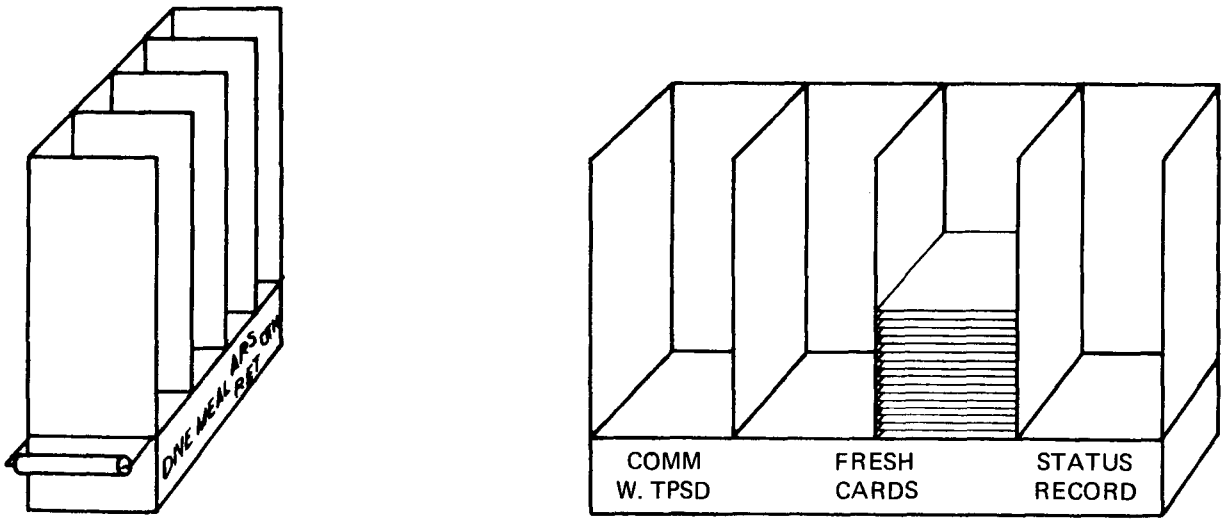
A copy of the 25 adjective MACL is available as Appendix B.

MOOD ADJECTIVE CHECKLIST TEMPLATES

Templates unavailable for inclusion at this time.

MAINTAINING PUNCH CARD SEQUENCE

On a frequent basis the punched cards collected on-site will be sent to Washington, D.C. for initial computer handling and analysis. In TEKTITE I by far the most frustrating and time consuming part of data management at Bellcomm lay in computer sorting of the cards into a proper time sequence. This could very simply have been avoided had the observers been trained to very assiduously maintain the order of the time sampling record they took [similar to our aquanaut status record] and order each of the other eighteen measures according to MSR ID, date, and time. Below is a procedure to accomplish this requirement with the TEKTITE II measures.



The On-line Situation.

As depicted in the sketch above two card holding hoppers or bins will be strategically placed on the recording table in the behavioral station. The right side observer, the aquanaut status record taker, will restrict his card acquisition and filing activities to the two right hand most sections of the card bin immediately available to his left hand. He will draw fresh cards from the inside section and file the card FACE DOWN in the outside bin. Across the 24-hour period of any given day the punched status cards will remain in that section. At midnight they are extracted and boxed. The

Maintaining Punch Card Sequence - continued:

observer must strictly adher to the sequential filing procedure. There is no readily conceivable reason why these cards should not be in perfect sequence.

The tandem observer shall draw his fresh cards from the inside, lefthand section. He will deal with three fairly frequent on-line measures - in order of frequency - communications with topside, diving, and meal behavior. He should file, in order of occurrence, communication records in the outside, left-hand section which will be marked. The second storage bin will be off to the left side of the 2nd observer with individual segments appropriately identified according to measure. Again, it cannot be emphasized enough that MSR ID discrimination [according to bin section] and time sequencing according to the face down filing procedure must be maintained.

Off-line Marking and Boxing.

At midnight one observer going off-duty shall collect the stack of cards punched that day for each measure and identify them by either writing across the top the name of the measure and the mission ID plus mission day as with the status record or in pencil on the top card of small collections like Comm. with Topside, etc. The whole day's collection of cards should be temporarily boxed according to the various MSR ID segments separated by rubber bands.

Shipping.

Once enough cards have been collected to fill a shipping case, the individual card decks will be packed strictly in accordance with measure ID across days. That is, first packed might be three or four days worth of aquanaut status records starting with the earliest day of the mission available and, in sequence, adding the succeeding 2 or 3 days worth. Then comes 3 or 4 days of MSR ID #2 in sequence, and so on.

Actual mailing procedures will be developed on-site after the project begins.

INSTRUCTIONS FOR USE AND CARE OF THE IBM

INFORMATION RECORDER

1. When the observer finishes recording a measure, he should unload the punch card immediately and reload with a fresh, unused card.

2. One double page information recorder will be used only for the aquanaut status record. The template will remain in the recorder permanently, as will most of the other templates.

3. When reloading, and before punching, insure that the sliding tray holding the punch card is firmly in place. Also remove the stylus from the punch position prior to pulling out the tray.

4. Be sure to punch identifying information right away, such as measures ID#, date, etc.

5. While punching information, be methodical. Check yourself for errors. As you become more practiced, try to increase your speed to prevent staleness. This will also allow you to record the maximum amount of accurate data.

6. When removing the punched IBM card from the recorder, inspect the backside of the card for punched sections which did not completely separate from the card. If time is of essence, you may delay this check until a slow period then flip through a stack of cards. Often just riffling through a stack of cards will shake loose any dangling chads.

7. Because the templates are so few and crucial to the data collection program, extra care in handling them will always be exercised. Of special concern is sliding the template into and out of the recorder. Also some thought should be given to punching only in the holes in the template maintaining the good condition of the overlay surface.

8. Occasionally the slide should be removed and the rubber tracks cleared of chads with the stylus. Less frequently the chad reservoir will need emptying.

9. If you made an error:
    1. At or near the beginning of the card: remove the card and punch a fresh one.

    2. Toward the middle or beyond: open the slide, circle in red the correct punch on the errored columns, return slide and punch rest of data. As soon as possible afterwards the card should be duplicated so as not to endanger the sort sequence. Duplication is speeded if the errored card is superimposed <u>over</u> the face of the template appropriately and the new card punched.

CONFIDENTIALITY

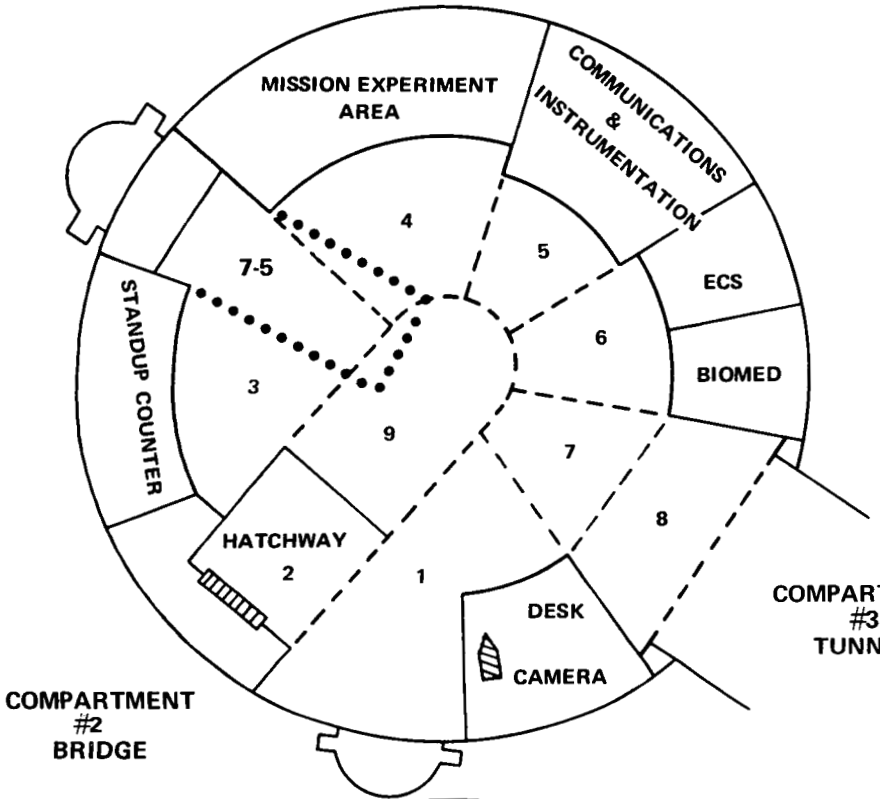
Each observer will be witness to many confidential events occurring in the habitat. Some of these will be of a highly personal nature to the aquanauts, others are internal to the project only. Maintaining the highest ethical standards are of utmost necessity for you as a psychological observer on Project TEKTITE II. To this end two restrictions will be placed on you.

I. Under no circumstances are you to talk with anyone other than Dr. Helmreich, James LeFan or John Wilhelm about anything happening in the habitat or behavioral van unless directed to by one of these three investigators. This includes such people as newspaper and television reporters, visitors, congressmen and other dignitaries. Your stock answer to any such inquiries is:

"I have no comment. Please direct your inquiries to a behavioral scientist."

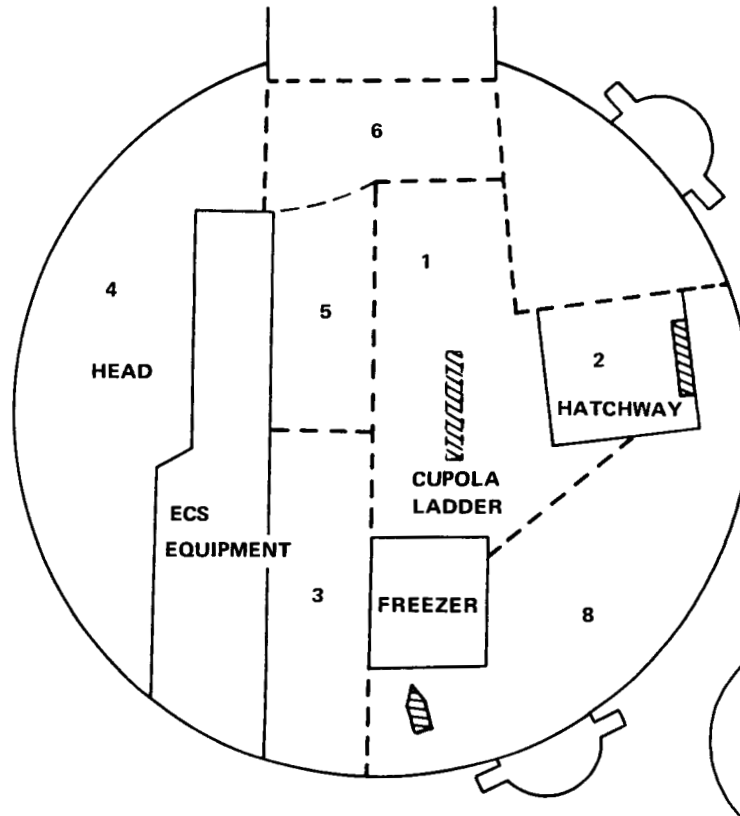
ABSOLUTELY NO VIOLATION OF THIS RULE WILL BE TOLERATED.

II. You will undoubtedly see and hear things in the habitat as observer that would or could be termed confidential. Such things should not be discussed with even members of other observer teams. If there is doubt about confidentiality, consult an investigator. Events of importance to the behavioral program in your opinion should be discussed with an investigator. Some of these events may be listed in the Unusual Events Log.



COMPARTMENT #2 BRIDGE

COMPARTMENT #3 TUNNEL



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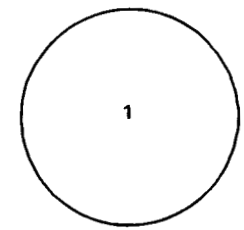

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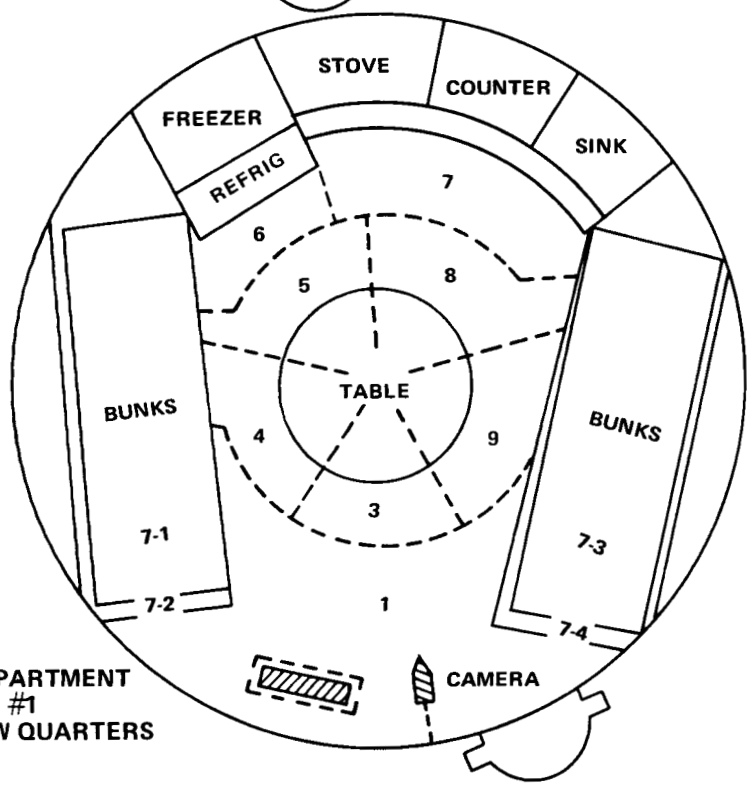
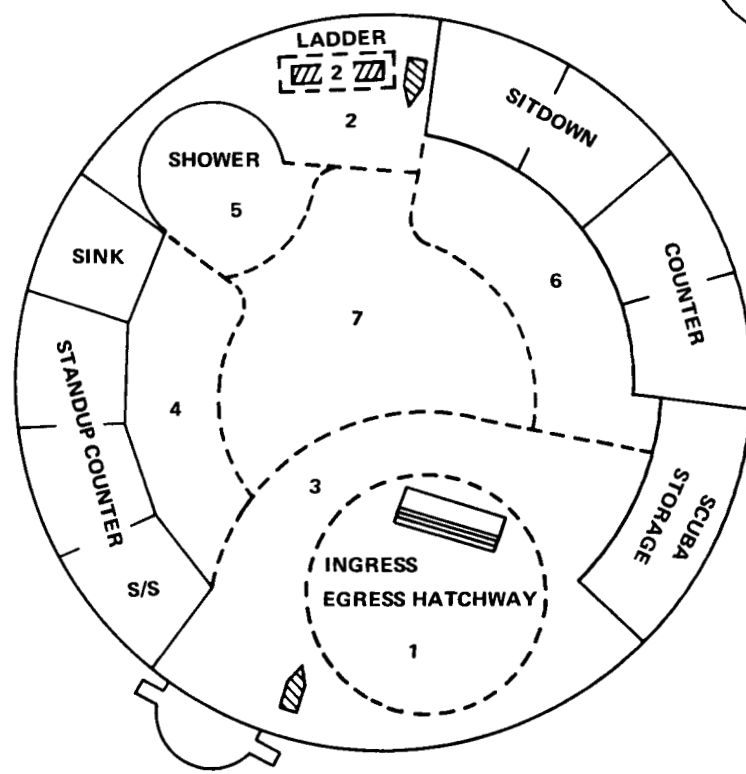


COMPARTMENT #1 CREW QUARTERS



COMPARTMENT #6 WET LAB

#8 WATER

#9 DON'T KNOW

APPENDICES

Appendix A

Movement Categories Instruction

There are ten fairly independent categories descriptive of the bodily movement of the aquanauts. These are: 0. No movement, 1. Light translational, 2. Moderate translational, 3. Vigorous translational, 4. Light manipulative, 5. Moderate manipulative, 6. Vigorous manipulative, 7. Light expressive, 8. Moderate expressive, 9. Vigorous expressive. The behavioral observer must first decide whether each aquanaut is moving or not; if he is moving, what kind of motion he is engaged in at that moment; and finally, with what degree of vigor is that specific movement accomplished. After reading the text, the observer should study the decision tree schematic which illustrates the decision paths to each category.

What Kinds of Movement are Included in the "No Movement" Category

Certain minor movements will not be considered as movement. The major decision criterion is really its detectability coefficient, i.e., how obvious is the movement? Such things as changes in facial expressions, bodily tics or tremors and other slight motions will not be considered movement. The other major collection of movements which must be disregarded is any movement of the head whatsoever. Forget nodding, tilting, bobbing, turning, or shaking of the head as being movement. Naturally, if the aquanaut is obviously motionless such as when asleep or resting, this is subsumed under the "No Movement" category.

How Do Translational, Manipulative, and Expressive Movements Differ

Translational movement is primarily moving oneself through the environment. That is, whole body movement such as transiting (walking, crawling, climbing) or bending where the trunk is in motion. Shifting of the body's weight, in whatever posture and repositioning of the body to allow better visual or physical access to something should be regarded as translational. Also to be regarded as translational is any obvious repositioning of the arms or legs for no apparent reason other than that the arms or legs do change status. Such movements will become clear if an individual who is resting quietly is observed. Occasional repositioning of the arms or legs, perhaps to gain comfort, will be quite obvious.

Manipulative movement revolves around the idea of dealing directly either with the environment or with the self. The idea of purpose is important here. Interfacing with equipment, instrumentation, or tools or changing clothes are examples of manipulative movement. As an attachment, Table 1 lists a variety of translational and manipulative movements for the observer.

Expressive movement comprises all obvious arm, hand, leg, or foot motions which either serve to communicate with someone or something in the environment or communicate to the observer something about the emotions of the aquanaut. Such specifics as gesticulating, finger drumming, toe tapping, scratching, leg wiggling would be included. The right most column of Table 1 lists a variety of expressive actions.

Within Each of the Three Movement Classes, How Is Vigor Determined

For the translational and manipulative categories, vigorousness is equated with energy expended. Once the observer determines movement to be translational or manipulative, he must then decide that within the set of all translational movements does this one require only slight energy, moderate energy, or considerable energy. Table 1, based on certain caloric data from a bioastronautics publication will aid you in making such determinations. Remember, unless otherwise specified you must assume the listed activity is being done as it is usually done. Although many entries in the table will not be seen during the Tektite II missions, their availability-for-reference will allow you a more accurate concept of what constitutes the three vigor categories within translational and manipulative kinds of movement.

For the expressive categories, vigor is viewed within the context of the specific action rather than the whole class of expressive movements. Once the observer determines the movement to be expressive, he determines rather subjectively, on the basis of what he knows about the aquanaut, what degree of robustness or emotionality to attach to the particular motion observed.

What If More Than One Class of Movement Is Occuring At the Moment of Sampling

The observer must determine which of the movements is the primary movement based on the general, apparent activity of the aquanaut.

How Long Is The Sampling Period For Movement

Each observer through training will be able to almost instantaneously memorize a "still picture" of the general status of each of the aquanauts. Naturally a still picture does not always indicate movement in process. Thus, the observer should allow himself one second within which he must make the determination of whether the man is moving or not, then, at his comparative leisure, categorize that movement and punch.

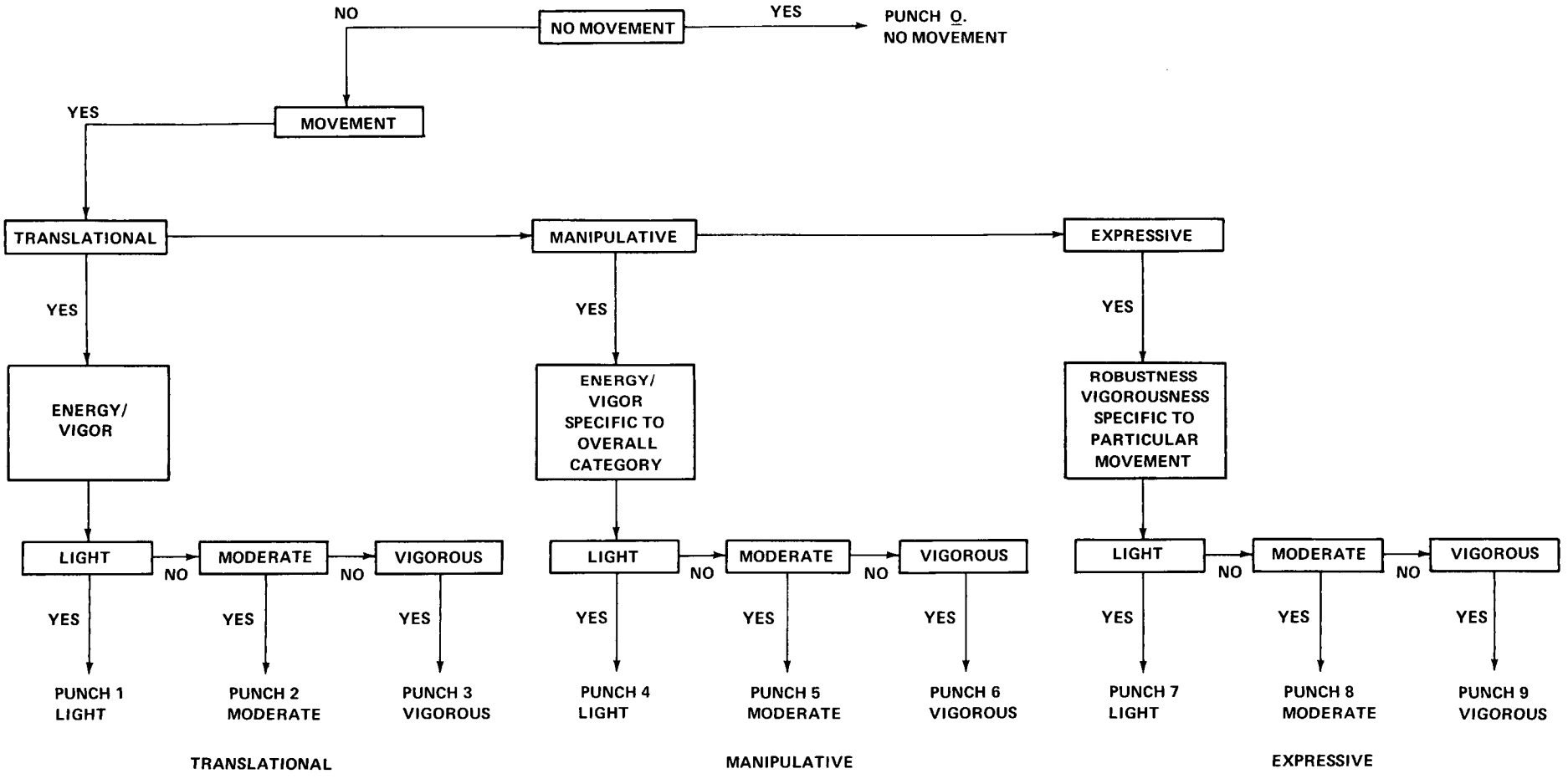


FIGURE 1 - THE DECISION TREE FOR MOVEMENT CATEGORIES

TABLE 1

NO MOVEMENT	LIGHT TRANSLATIONAL	MODERATE TRANSLATIONAL	VIGOROUS TRANSLATIONAL
absolutely no movement	slight shifting of the body weight [in any posture]	restless, rapid & shifting of the body weight	moving rapidly about the habitat
tics & tremors	rocking on the heels	moving slowly from compartment to compartment	steadily climbing ladder up or down
any head movement must be disregarded	casual repositioning [change in posture] for better visual or physical access	comparatively rapid postural change	general and heavy exercise
sleeping	repositioning of arms or legs without specific purpose	very light exercising	rapid ergometer pedaling
resting	moving slowly about a compartment	creeping, crawling	leg lifting exercises
lying fully relaxed		swimming the crawl at 1.0 MPH	swimming backstroke at 1.0 mph and breaststroke at 1.6 mph
sitting at rest			soccer
			fencing
			basketball
			climbing stairs
			wrestling

MOVEMENT CATEGORIES EXAMPLES

TABLE 1 [continued]

LIGHT MANIPULATIVE	MODERATE MANIPULATIVE	VIGOROUS MANIPULATIVE	EXPRESSIVE
switch flipping	putting on or taking off clothing	handling roughly	scratching
button pushing	assembling large equipment	lifting scuba bottles or bacpak	drumming the fingers
gauge turning	chopping wood	hammering continuously	short abbreviated hand movements usually while talking
unbutton/button clothes		lifting weights	slow sweeping gestures
writing		manhandling pressure pots	jiggling the leg
drafting/map drawing		sliding heavy boxes across floor	shaking the fist
peeling potatoes		shoveling sand, digging	
assembling light equipment			
washing clothes			
manipulating psycho-motor test device			
polishing			
entering ledgers			

Appendix B

8 UT

Name _____ Date _____ Time _____

Below is a list of feelings people have. Show how you feel right now by circling the number which is closest to your feelings. Please answer each question.

Example: If you felt more than moderately concerned but less than extremely concerned, you might answer like this:

CONCERNED

1 2 3 4 5 6 7 8 (9) 10
Not at all Slightly Fairly Extremely

---

1. FINE

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

2. JITTERY

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

3. ENERGETIC

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

4. SLEEPY

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

5. AFRAID

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

6. SAD

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

7. VIGOROUS

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

8. ANGRY

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

9. GOOD

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

10. ALERT

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

11. TERRIFIED

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

12. CALM

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

13. EXHAUSTED

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

14. RESTLESS

1 2 3 4 5 6 7 8 9 10
Not at all Slightly Fairly Extremely

---

15. ANNOYED

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

16. LIVELY

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

17. CHEERFUL

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

18. HARASSED

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

19. FRIGHTENED

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

20. ACTIVE

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

21. FATIGUED

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

22. ANXIOUS

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

23. HAPPY

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

24. IRRITATED

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

---

25. TENSE

1	2	3	4	5	6	7	8	9	10
Not at all			Slightly			Fairly			Extremely

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